Michael F. Stewart

Mike Stewart obtained a BS and MEE in electrical Engineering from Rice University in 1972 and 1973. Upon graduation he joined the Space Physics and Astronomy Department where he worked with Arthur Few's group in lightning and thunderstorm research. He designed and fabricated a balloon-based electronics unit that lead to the first successful vector electric field measurements inside thunderstorms.

Mr. Stewart left Rice in 1982 to form Thunderstorm Technology in Durango Colorado where he successfully designed a number of products including an airborne charged particle imaging spectrometer, ground-based meteorological data acquisition systems, signal processing electronics for a rotary vane electric field mill with improved SNR and patented self-calibration facility, a prototype electric field mill to replace the LPLWS field mills at CCAFS and various instruments for Earle Williams at MIT including a ground-based array of corona current sensors, rain current sensors, a field mill to operate on Mt. Washington, and a Schumann Resonance electric field sensor. Thunderstorm Technology has also provided the Electric Field Warning System for NASA/GSFC/WFF, upgraded the 32 LPLWS Electric Field Mill Sensor LRUs at CCAFS and is currently developing an upgrade to the LPLWS Calibration Facility under contract to ITT/Exelis.

In 1989, after the Atlas Centaur 67 launch vehicle was destroyed by lightning, Mr. Stewart moved the University of Alabama in Huntsville where he lead a team that designed, fabricated, calibrated and installed new Electric Field Mill Sensors for the LPLWS array at CCAFS. This facility has help maintain launch vehicle safely since it began initial operations in 1992. Mr. Stewart also a number of airborne electric field mills that have flown successfully in over six different types of aircraft. The resulting measurements have not only contributed to improved understanding of cloud electrification processes, but have contributed to launch vehicle safety by helping to identify the type of clouds that could potentially present a threat for triggered lightning. He also designed the front end electronics for a solar-imaging camera for NASA/MSFC.

Mr. Stewart has designed electronics for four space-based lighting sensing instruments while at UAH: the Optical Transient Detector, the Lightning Imaging Sensor (LIS), the GOES-R Geostationary Lightning Mapper (GLM), and (currently) the ISS-LIS. Mr. Stewart obtained a subcontract from Lockheed Martin Missiles and Space Systems in Palo Alto, CA for UAH to design the Real Time Event Processor array for the GLM that helped make possible the daytime optical detection of lightning from space.

Other current effort is designing the electronics for a new generation electric field change network that will be key for ground validation of both the new LIS and the GLM.